

WHAT IS CLAIMED IS:

1. A friction sheet welding method for joining two work pieces comprising the steps of:

5 a) firmly butting the two work pieces so that their joining surfaces face each other;

10 b) positioning a cylindrical rod shaped probe, which is made of material harder than the work piece material, on a weld joint line between the work pieces so as come into contact with the work pieces;

c) producing forcible and intense plastic deformation at surfaces of the work pieces while generating frictional heat at the surfaces by rotating the probe at a high speed;

15 d) joining the work pieces together as the plastic deformation produced at the surfaces of the work pieces permeates inside material constituting the work pieces; and

e) continuously welding the work pieces by traversing the probe in a horizontal direction along the weld joint line.

20 2. The method as set forth in claim 1, wherein the probe has a diameter twice as much or greater than the thickness of the work pieces.

25 3. The method as set forth in claim 1, wherein, in case the probe has a diameter smaller than twice the thickness of

the work pieces, double pass welding is performed against both upper and lower sides of the work pieces.

4. The method as set forth in claim 1, wherein the probe  
5 has a plurality of protrusions at its lower end surface in order to increase a coefficient of friction thereof.

5. The method as set forth in claim 1, wherein the work pieces are made of the same or different materials.